

driving means for, before the driving means drives the
electromagnetic wave generating means, driving the
electromagnetic wave generating means and thereby causing the
electromagnetic wave generating means to generate and transmit a
5 judgment electromagnetic wave having an energy smaller than that
of the distance measurement electromagnetic wave; and obstacle
judging means for judging whether an obstacle is present or absent
on the basis of conditions of reception of an echo wave
corresponding to the judgement electromagnetic wave by the
10 receiving means, for causing the first driving means to drive the
electromagnetic wave generating means next to generate and
transmit a first distance measurement electromagnetic wave in
cases where it is judged that an obstacle is absent, and for causing
the first driving means to drive the electromagnetic wave
15 generating means next to generate and transmit a second distance
measurement electromagnetic wave in cases where it is judged that
an obstacle is present, wherein the second distance measurement
electromagnetic wave is lower in energy than the first distance
measurement electromagnetic wave.

20 A third aspect of this invention is based on the second aspect
thereof, and provides a distance measurement apparatus wherein
the second distance measurement electromagnetic wave is lower in
amplitude than the first distance measurement electromagnetic
wave.

25 A fourth aspect of this invention is based on the second aspect
thereof, and provides a distance measurement apparatus wherein a

duration of generation of the second distance measurement electromagnetic wave is shorter than that of the first distance measurement electromagnetic wave.

5 A fifth aspect of this invention is based on the second aspect thereof, and provides a distance measurement apparatus wherein each of the first distance measurement electromagnetic wave and the second distance measurement electromagnetic wave contains at least one pulse, and a pulse in the second distance measurement electromagnetic wave is smaller in width than that in the first
10 distance measurement electromagnetic wave.

A sixth aspect of this invention is based on the second aspect thereof, and provides a distance measurement apparatus wherein each of the first distance measurement electromagnetic wave and the second distance measurement electromagnetic wave contains at
15 least one pulse, and the second distance measurement electromagnetic wave is smaller in pulse number than the first distance measurement electromagnetic wave.

A seventh aspect of this invention is based on the second aspect thereof, and provides a distance measurement apparatus
20 wherein the first distance measurement electromagnetic wave results from modulation in accordance with a pseudo noise code having a first bit length, and the second distance measurement electromagnetic wave results from modulation in accordance with a pseudo noise code having a second bit length smaller than the first
25 bit length.

An eighth aspect of this invention is based on the second

aspect thereof, and provides a distance measurement apparatus wherein the obstacle judging means comprises second calculating means for measuring a time interval between a moment of every generation and transmission of the judgement electromagnetic wave
5 by the electromagnetic wave generating means in response to drive by the second driving means to a moment of reception of a corresponding echo wave by the receiving means, and for calculating a distance to an obstacle on the basis of the measured time interval, and judging means for judging whether an obstacle is
10 present in or absent from a prescribed distance range on the basis of the distance calculated by the second calculating means.

A ninth aspect of this invention provides a distance measurement apparatus comprising first means for emitting a first laser beam in a first direction, the first laser beam having a first
15 power; second means for receiving an echo corresponding to the first laser beam; third means for determining whether or not the second means receives an echo corresponding to the first laser beam; fourth means for emitting a second laser beam in the first direction in cases where the third means have determined that the
20 second means receives an echo corresponding to the first laser beam, the second laser beam having a second power; fifth means for emitting a third laser beam in the first direction in cases where the third means have determined that the second means does not receive an echo corresponding to the first laser beam, the third
25 laser beam having a third power, the third power being higher than the first power, the third power being higher than the second